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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shoji Hara

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WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER

TALBOT, BRIAN K

ART UNIT

PAPER NUMBER

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/15/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/782,169	HARA ET AL.	
	Examiner	Art Unit	
	Brian K. Talbot	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The amendment filed 1/16/07 has been considered and entered. Claims 14-16 have been canceled. Claims 1-13 and 17-20 remain in the application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1-9,13 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (5,156,710) or Shiotani et al. (5,741,598) in combination with JP 54-066966.

Chen et al. (5,156,710) or Shiotani et al. (5,741,598) teach applying a metal layer to a polyimide layer and heating to form a conductor layer atop the polyimide layer. The polyimide layer is formed by imidizing a polyamic acid. The metal layer can be applied by a variety of ways but laminating a metal foil is most preferred.

Shiotani et al. (5,741,598) further teaches that it is conventional in the art to form the metal layer atop the polyimide film by plating (col. 1, lines 27-30) The laminate is formed by applying the metal layer to the imide layer and heating by pressure.

Chen et al. (5,156,710) or Shiotani et al. (5,741,598) fail to teach heating the said laminate.

JP 54-066966 teaches manufacturing a composite sheet. A metal foil and a heat-resistant polymer are combined to form a laminate and then the laminate is aged at a temperature and atmosphere that does not result in reduced adhesion strength (abstract).

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Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Chen et al. (5,156,710) or Shiotani et al. (5,741,598) process by performing a subsequent ageing step as evidenced by JP 54-066966 with the expectation of achieving a superior bond between the polyimide and the metal layers.

Claims 1,3-11,13 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 62-60640 or JP 11-240,106 in combination with JP 54-066966.

JP 62-60640 teaches sputtering or vapor depositing a metal atop a thermoplastic polyimide sheet and heating to form the laminated film. JP 62-60640 forms the laminates in a continuously mode of extrusion forming. Not laminated with metal, the resin may be plated with metal through chemical plating, electroplating, sputtering or vapor deposition to produce the laminates of the invention (pg. 7 of translation filed 1/09/04)

JP 11-240,106 teaches applying a metal or metal oxide layer on a polyimide layer by vapor deposition or sputtering (abstract).

JP 62-60640 or JP 11-240,106 fail to teach heating the said laminate.

JP 54-066966 teaches manufacturing a composite sheet. A metal foil and a heat-resistant polymer are combined to form a laminate and then the laminate is aged at a temperature and atmosphere that does not result in reduced adhesion strength (abstract).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified JP 62-60640 or JP 11-240,106 process by performing a subsequent ageing step as evidenced by JP 54-066966 with the expectation of achieving a superior bond between the polyimide and the metal layers.

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With respect to claims 19 and 20 that recite a peel strength, it is the Examiner's position that the claimed peel strength would be achieved by the combination of prior art as the processes and materials are similar.

With respect to claims 8 and 9, the claims recite a using pressure with the heating step. While the Examiner acknowledges the fact that the prior art fails to teach pressure in the subsequent heating step, the prior art does teach utilizing pressure in forming the laminate that improves adhesion between the polyimide and the metal layer. Hence it is the Examiner's position that one skilled in the art would have had a reasonable expectation of achieving similar success, i.e. improved adhesion, with the aid of pressure in the subsequent heating step as evidenced by the heating/pressure step in forming the laminate.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 62-60640, Chen et al. (5,156,710), Shiotani et al. (5,741,598) or JP 11-240,106 in combination with JP 54-066966 further in combination Ameen et al. (5,681,443).

JP 62-60640, Chen et al. (5,156,710), Shiotani et al. (5,741,598) or JP 11-240,106 in combination with JP 54-066966 fail to teach wet coating a metal atop the dry coated metal.

Ameen et al. (5,681,443) teaches forming printed circuits whereby a metal flash layer is applied to a polymer substrate by vapor deposition or sputtering and subsequently a metal layer is applied to the flash metal by electrodeposition.

Therefore it would have been within the skill of one practicing in the art to have modified JP 62-60640, Chen et al. (5,156,710), Shiotani et al. (5,741,598) or JP 11-240,106 in

combination with JP 54-066966 by forming a second metal coating by wet plating as evidenced by Ameen et al. (5,681,443) with the expectation of achieving success, i.e. a thicker coating.

Response to Arguments

4. Applicant's arguments filed 1/16/07 have been fully considered but they are not persuasive.

Applicant argued that the secondary reference teaches forming a polyimide film prior to forming the metal layer thereon and not forming the film after applying the polyimide precursor thereon.

While the Examiner acknowledges this fact, JP 54-066966 teaches forming the polyimide film on the metal and then forming the "ripening" step. Hence, the "post-treatment" step is formed after the laminate is formed with the metal. Hence, it is the Examiner position that one skilled in the art would have had a reasonable expectation of achieving similar success regardless of when the "polyimide film, i.e. laminate" is formed as long as the laminate is formed prior to the post-heat-treatment step. If Applicant disagrees, Applicant is invited to supplying a showing of unexpected results regarding this limitation. Upon such a showing the Examiner will reconsider his position.

Furthermore, pointing out the differences between the reference and each individual reference is not sufficient to overcome a rejection based on a combination of the references. One cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references. *In re Keller*, 208 USPQ 871 (CCPA 1981); *In re Merck &*

Co., Inc., 231 USPQ 375 (Fed. Cir. 1986). The test of obviousness is not express suggestion of the claimed invention in any or all references but rather what the references taken collectively would suggest to those of ordinary skill in the art presumed to be familiar with them. *In re Rosselet*, 347 F.2d 847, 146 USPQ 183 (CCPA 1965); *In re Hedges*, 783 F.2d 1038.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K. Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BK Talbot 2/12/09

Brian K Talbot
Primary Examiner
Art Unit 1762

BKT